

# Welcome to the Science Gala!

University of Warwick- Science Concourse

Wednesday 5<sup>th</sup> February 2020

5.00-8.30pm

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## INTERACTIVE SHOW WITH SAM GREGSON

**Starting at 17:30 and 19:00**

**Duration: approximately 1h**

Seats allocated on a first come first served basis.

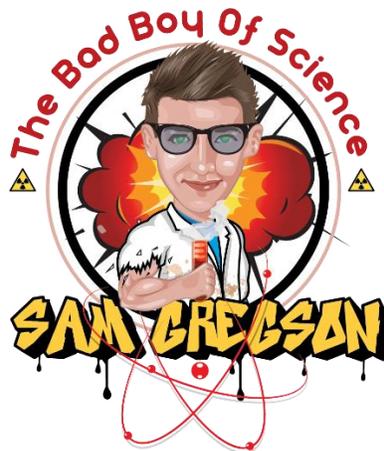
Possibility to attend only part of the show. All ages welcome!

The discovery of the Higgs Boson was one of the greatest and most exciting discoveries of science – could you have made it too? Join the hunt for the Higgs in this highly interactive comedy show where you the public are in charge of the Large Hadron Collider. Using a smartphone or tablet you will have direct access to LHC data, and complete interactive games to help solve problems and analyse data. A unique, fast-paced, exciting, entertaining and very hands-on show.

**Please bring a charged smartphone or tablet with you!**

### Speaker

Sam Gregson is a physicist, science comedian and resident anarchist at the University of Cambridge, and the Large Hadron Collider (LHCb) experiment at CERN, Switzerland. He's also the founder and project manager of LHComedy, CERN's 1st comedy show.



## Tours

All our tours have limited availability and are on a first come first served basis. Please queue up in the designated area.

Physics Teaching Laboratories – duration approximately 15minutes - suitable from KS3

Chemistry Teaching Laboratories - duration approximately 20 minutes - suitable from KS3

## Workshops/Shows

Spaces allocated on a first come first served basis.

**For Key stages 1 and above – 5:00-8:30, 15 minutes/show, room PS1.28**

### Planetarium

*'Join us in our journey to the centre of our galaxy, a 5 minute planetarium show to discover how astronomers investigate what lies at the heart of the Milky Way using powerful telescopes.'*

**From KS1 to Year 9 – 5:00-8:30, 20 minutes/workshop, room B201  
(Workshops will run every half-hour)**

### Flux Dance

*How can dance help you to understand the language of computers? Join FLUX to find out as they explore programming and coding through movement, creativity and lots of games. This workshop is suitable for younger children and their families or students up to Year 9. A drop in session with multiple challenges. Can you break the code?*

**For Key stages 1 and above (adult supervision required) – 5:00-8:30,  
20 minutes/workshop, (Workshops will run every half-hour) room B203**

### WWE and EWB – Wind turbines

*Concerned about the planet? Want to know what engineers are doing to help? Then join Engineers without Borders and Women's Engineering societies at Warwick to discover the wonders of renewable energy sources.*

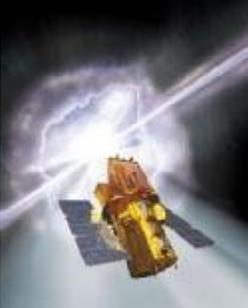
*Have a go building your wind turbines and get to know some of the engineering students here at the University. "*

**For Key stages 1 and above– 15 minutes/show, Lecture Theatre L5 - show starts at  
5:15 – 5:45 – 6:15 – 6:45 – 7:15 – 7:45 (optional)**

### Let's Make A Deal – The Monty Hall Problem

*'How can understanding probability help you win chocolates and avoid cabbages?'*  
*Prizes to be won...*

## Exhibition Stands

<p><b>Astronomy and Astrophysics</b></p>		<p>Get a taste of the research being carried out by the Astronomy group at Warwick, and learn about some of the telescopes that we use in our work. We'll even have a live link to our observatories in the Canary Islands and Chile! Group members will be on hand to answer your questions on topics ranging from the discovery of distant planet, to chasing gravitational waves, to tackling the problem of space debris.</p>
<p><b>CERN</b></p>		<p>At our stand you will have the chance to play with augmented and virtual reality to understand the physics of little, tiny particles that permeate the Universe. What makes these particles special is that they are absolutely everywhere, but at the same time (almost) impossible to see.</p>
<p><b>CFSA</b></p>		<p>Research at the Centre for Fusion, Space, and Astrophysics (CFSA) focuses on plasma physics applied to the grand challenges of magnetic and inertial fusion power, space physics, solar physics, and astrophysics. Visit us to learn what it's like to be a researcher in the field of plasma physics, see the latest movies and images of the Sun from NASA's Solar Dynamics Observatory and perform experiments that tell us about the physics of plasmas, the Sun, and other stars.</p>
<p><b>Chemistry Society</b></p>		<p>We provide a range of activities and workshops to help young people discover their future potential in STEM subjects. The project allows university students to volunteer, working with local schools, clubs and groups both on and off campus, all free of charge.</p>

**Cyber Security GRP**



Cyber Security - Vehicle control systems, building management systems, smart city infrastructure, industrial control and medical devices all exist within the cyber domain. As our manufactured environment becomes increasingly dependent on digital systems, we conduct research into both the nature of the cyber environment and the protection of the human experience within it. The Cyber GRP will have some Electronic Control Units (ECUs) from vehicles on show. These digital computers are often hidden away in cars but our lives depend on them when we travel in vehicles. The Cyber GRP's research reduces the risk from malicious attacks against these computers. Visitors will see how the vehicle's computers communicate. They will be able to interact with a vehicle's LiDAR sensor, which uses infrared light to sense the environment

**Diamond Science and Technology CDT**



We all know diamond is a rare, precious gem, but did you know that we can grow diamond in a lab? Would you like to build your own diamond? ...Or use diamond to cut through ice, like a knife through butter? Come and meet our scientists to discover the amazing properties of diamond, and how we can use it in exciting new ways.

**Energy GRP**



We have a focus on how energy is stored and used: Examples include power electronics in devices, heating & cooling, battery & thermal storage and the electrification of transport. We take a multi-disciplinary, systems view of energy. Rather than seeing energy as a collection of technologies, we consider energy as a set of systems in the broadest sense that includes behaviours, social impact and the politics of energy through research in energy markets, policy & governance. We are a national demonstrator and have a growing sense of our regional contribution. This reflects a broad and strong working relationship between the research community and the University's Estates Department that combines a "living laboratory" approach with running a sustainable, cost efficient energy system that's nationally recognized.

**Engineers Without Borders**



Engineers Without Borders is a society focused on engineering, sustainability and development. We want to raise awareness and get people excited about these things, whether that's through student lead projects, outreach or speakers. We believe an important aspect of addressing some of the biggest issues today - climate change and poverty, lies in engineering and education. As such, we've collaborated with many societies on campus to provide real solutions to real problems and help aspiring entrepreneurs realise their projects, and we have run hundreds of outreach sessions through the years, educating children and getting them excited about the ways engineering can make a difference.

**EPSRC Centre for Doctoral Training in Modelling of Heterogeneous Systems (HetSys)**



We all know about light: sunlight is the cornerstone of life on Earth and artificial light (light bulbs, LEDs...) is essential to our day-to-day lives. Most of us would also know that light interacts with most of the things it shines upon: tan lines or sunsets are classic examples, but scientists can also leverage this light-matter interaction to understand the properties of many different materials, with important applications to renewable energy and structural biology. To show you how it's done, we propose a case study where we are going to showcase the impact of structure on the colours of different molecules: colour is something that depends on how exactly light interacts with matter, and because of that, if you change structure, you change colour!

As we go along, we will follow a very scientific approach: from an observation (experiment) we will come up with an hypothesis (an idea!) that we will test (with the help of a computer) and develop further into an actual scientific theory. You will see that - believe it or not - computer simulations can help us to bridge the gap between the microscopic structure of molecules and materials and our every-day experience.

If computers are not your thing, fear not! We will have plenty of balls & sticks molecular models for you to play with - and challenge yourself with the understanding of structure at the microscale!

**Flux: Moving Science**



Look around you. What can you hear, see or feel? Is anything moving? All around us, energy enables change and makes things happen. It even allows us to move! Join Flux Dance as they explore the different types of energy around and within us through movement, games and lots of fun.

**Innovative Manufacturing GRP**



The Innovative Manufacturing and Future Materials Global Research Priority has 6 thematic areas of Circular Economy, Fundamental Materials, Future Materials, Industrial Biotechnology, Industry 4.0 and Manufacturing & Materials in the Society. They are all aligned to both national and international priorities for industry and society. This GRP brings together engineers, chemists, physicists, computer scientists, mathematicians, statisticians, social and life scientists to position Warwick as a global centre of excellence in the multidisciplinary research that underpins these priority areas.

Come and visit our area and experience some of our associated initiatives.

Sponsoring student interns and projects brings theory to life.....can you make an eco-friendly and cost effective crash structure to protect an egg dropping at high speed??? Think of a driver in a high speed racing car!!

**Lanchester Interactive Archive**



Visit the pop-up Lanchester Interactive Archive where you can have a taste of the full exhibition and discover more about this little-known local hero. Genius and engineer Frederick Lanchester is probably best known for creating the first all-British four-wheeled motor car in 1895 and his hundreds of patents for concepts like turbo-charging, four-wheel drive and aeroplane winglets are still in use today.

See Lanchester's ideas come to life through amazing augmented reality; explore the online archive of unique sketches and patents that shape our lives today; play our games, challenging your engineering, flying and driving skills and find out more about the full exhibition and the link with STEM subjects today in Coventry University's Lanchester Library.

**Physics Society**



For students, by students. The Physics Society provides both academic support to its 300+ undergraduate members through mentorship schemes and specialized help sessions, as well as a social platform for physics students through a wide variety of regular social events. There is no other place where the Physicist stereotype is so firmly reinforced and completely dispelled at the same time!

**STEMtastic**



*Have you ever wondered what makes a bathbomb fizz? Find out and make a bathbomb to take home!*

STEMtastic is an education consultancy with a focus on Science, Technology, Engineering and Maths.STEMtastic aims to initiate or develop a school's STEM provision by integrating a well planned and resourced programme of inter and extra- curricular activities, training staff and demonstrating good practice. As each school's requirements are different, STEMtastic offer a bespoke service to

meet your needs. STEMtastic also offers sessions designed for the Home Educated community, delivering Science with a STEM focus in a fun and engaging way in village halls and public buildings.

Experience more of STEMtastic with our Holiday Club and Birthday Parties!

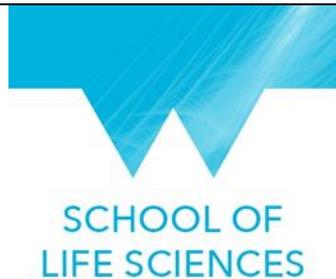
**School of Life Sciences**



### **Your Amazing Brain**

The human brain is enormously complicated. There are around 86 billion nerve cells (neurones) in your brain, as well as a similar number of supporting cells (glia). The neurones communicate with each other at specialised junctions, of which there may be as many as 10,000 per neurone, giving rise to an astronomical 860 TRILLION connections between neurones! Amazingly, the number of connections can change with experience, such as learning a musical instrument, and with ageing where a gradual decline in the number of connections is seen. At this demonstration, hosted by Neuroscientists from Warwick's School of Life Sciences, you'll be able to see microscopic images of the fine structure of the brain, and use anatomical models to help understand the workings of the brain and nervous system. This will also be an opportunity to talk to brain scientists about topical issues in brain health and well-being, such as Alzheimer's disease, epilepsy and stroke.

**School of Life Sciences**

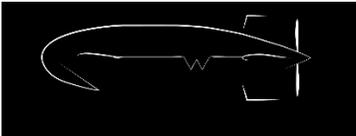


What is Synthetic Biology and what can it do for our futures? Come and meet our scientists who will help you explore the world of Synthetic Biology with *enlightening* end results!

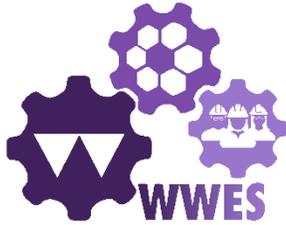
**Technet**



The Technician Commitment, launched at the University of Warwick in 2017, is instrumental in ensuring that we highlight the vital role our technical staff play in our teaching, research and infrastructure, without which the institution could not operate.

<p><b>Warwick Estates</b></p>	 <p>ENVIRONMENTAL SUSTAINABILITY</p>	<p>Staff and students are researching various issues around sustainability, be that energy generation or how manmade climate change might affect our world. We all have a part to play in making a positive impact, so come along to learn about some of the simple actions you can take and also learn what is truly at stake</p>
<p><b>WMG Outreach</b></p>	 <p>THE UNIVERSITY OF WARWICK</p>	<p>Come and try out our activities using computer aided design software!</p>
<p><b>Warwick Medical School</b></p>		<p><b>Exploring the inner world of the living cell</b></p> <p>The <b>eduWOSM</b> is Warwick’s newest open hardware microscope, produced for our new Integrated Science undergraduate course and capable of seeing deep into the inner workings of cells. We will have 3 eduWOSMs available for you to play with, and some amazing cells to look at – swimming plants, dividing cancer cells, and crawling amoebae. Come along and be amazed by the world of activity inside every living cell!</p>
<p><b>Warwick Racing</b></p>		<p>Interested in Formula 1, motorsport, and racing? Visit Warwick Racing for the exciting opportunity to see footage of our Formula Student vehicle, built and raced around the world by students here at the university. Race a Scalextric car round the track, see components of the Warwick Racing car and video footage!</p>
<p><b>Warwick Robotics</b></p>		<p>We are the 2018/19 Warwick Mobile Robotics (WMR) team. A diverse group of MEng students from the University of Warwick designing and building an Urban Search and Rescue Robot. WMR is a research group at the University of Warwick specialising in the development of urban search and rescue robots for use in surveillance, disaster zones and safe monitoring of hazardous sites. Come and control a Robot!</p>
<p><b>Warwick Sub Team</b></p>		<p>Warwick Submarine is a 4th year engineering project and each year a team of students undertake the challenge to develop and test a human powered racing submarine. It competes annually at submarine races worldwide; this year at the 16th International Submarine Race in the USA.</p>

**Warwick  
Women's  
Engineering  
Society**



At WWES, we are dedicated to supporting our members into successful STEM careers. We recognize that with the future of technology, the workers of tomorrow must be adaptable, confident and motivated. Through a range of initiatives – name outreach, socials and events – we aim to develop member's CPD, encourage networking and foster a community atmosphere through our social events. Affiliated with the UK women's engineering society, we have 100+ years of experience and rich history driving and motivating our purpose.

It is our belief that by connecting outstanding students with future employers, we can begin to break those barriers that prevent minorities from accessing the industry. Our society is not just for women in engineering but is open to anyone who is passionate about creating a friendly and welcoming environment.

**XMaS**



The student winners of XMaS Scientist Experience 2018 will share their experiences of winning the competition to visit XMaS at the European Synchrotron Radiation Facility (ESRF). They will discuss what they have learnt and give details of this year's competition, which is now open.

***Thank you for attending and to all the helpers that made  
this event possible.***

***And special thank you to our sponsors:***

